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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,880	03/27/2000	Charles F. Neugebauer	00-S-023	3367

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EXAMINER	
BRIER, JEFFERY A	
ART UNIT	**PAPER NUMBER**
2672	7

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/536,880	NEUGEBAUER, CHARLES F.	
	Examiner	Art Unit	
	Jeffery A. Brier	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2 and 4* is/are allowed.

6)☒ Claim(s) *3,5-10,12-16,18-22,24 and 25* is/are rejected.

7)☒ Claim(s) *11,17 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The amendment filed on 02/24/03 has been entered. Claims 2-6, 8, 14, 16, and 20 has been amended. Claim 1 has been cancelled. Claim 25 has been added.

Response to Arguments

2. The arguments filed on 02/24/03 have been considered.

The argument concerning the objection to the specification and the rejection under 35 U.S.C. 112, second paragraph, is persuasive. Applicants discussion of the phrase "local context metric" brings out the subtle but important difference between the Metric measurement system and the dictionary meaning of metric provided by Merriam-Webster Online Diction (http://www.m-w.com/, Merriam-Webster, Inc., 2002). The Metric measurement system is one example of a standard of measurement.

The arguments concerning the Lin reference at page 8 lines 7-11 are not persuasive. The Lin reference at column 8 lines 10-32 and 40-45 Lin describes the functions of figure 3 are performed by a computer and associated software. Thus, the software at lines 40-45 would need to include the coefficients for the function of the image processor to be performed and the hard disk storing the software is a memory. Thus, in the software embodiment, the hard disk stores at least two convolution kernel coefficients. The Lin reference additionally suggest storing the convolution kernels described at column 6 lines 21-22, 37 and 58 in a memory since the sigmoid filters 82 and 90 are stored in a single look up table, column 6 lines 66-67.

The arguments concerning the Lin reference at page 8 lines 11-14 are not persuasive. The Lin reference and the Miyake reference together teach convolution kernels that include at least one smoothing kernel (Miyake, column 9 lines 51-55, to prevent the fine lines from being cut, a smoothing kernel is inherently used) and at least one sharpening kernel (Miyake, column 9 lines 51-55, to prevent the corners from being smoothed , a sharpening kernel is inherently used).

The arguments concerning the Lin reference at page 8 lines 14-19 are not persuasive. The Lin reference suggests storing the convolution kernels since the sigmoid filters 82 and 90 are stored in a single look up table, column 6 lines 66-67. Since it would make economic sense to fully utilize the memory, storing the convolution kernel coefficients along with the two sigmoid filters in a memory would be desirable. Additionally the argument Lin also fails to disclose an image scaling device that includes a kernel generator that stores all available convolution kernels and selects one of the stored convolution kernels as the current convolution kernel based on a calculated local context Metric is not persuasive because applicant does not claim how many kernels are stored, thus, the two convolution kernels of Lin meets this claim limitation.

Status of the claims

3. Claim 1 is cancelled. Claims 4 and 2 are allowed. Claims 11, 17, and 23 are objected to as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 3, 5-10, 12-16, 18-22, 24 and 25 are rejected.

Drawings

4. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. The quality of the drawings are poor and poorly hand written letters and numbers are present.

Allowable Subject Matter

5. Claims 4 and 2 are allowed.

6. Claims 11, 17, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Claims 4 and 2:

The arguments presented by applicant concerning amended claim 4 and Miyake is persuasive. Claim 4 is allowable in view of Lin even though Lin stores the convolution kernels, as described above, however, Lin does not teach or suggest the last two lines of claim 4, wherein in the generating step, either one of the stored convolution kernels is selected or another convolution kernel is generated by interpolating the stored convolution kernels.

Claims 11, 17 and 23:

See the reasons given for claim 4.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 5, 3, 6, 8, 10, 12, 14, 16, 18, 20, 22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin, U.S. Patent No. 6,044,178. Figures 2 and 3, column 1 lines 6-12, column 2 lines 56-67 and column 5 line 58 to column 6 line 4 describes scaling a source image to produce a destination image. The following detailed analysis illustrates how Lin renders applicants claimed invention obvious.

Claim 5:

Lin teaches a method for scaling a source image (figure 2, S) to produce a scaled destination image (figure 3, output of image merging unit 96), said method comprising the steps of calculating a local context metric from a local portion of the source image (column 2 lines 56-58, column 4 lines 47-50, and column 5 lines 5-12 and 21-34, text segmentation unit 58 and image separation unit 66); generating a convolution kernel from a plurality of available convolution kernels (column 6 lines 21-22, 37 and 58) based on the calculated local context metric (depending upon the tile's values one of three convolution kernels is selected to be applied to the tile); using the generated convolution kernel to generate at least one pixel of the scaled destination image (column 6 lines 22-24, 37-42, 58-63), the scaled destination image having a

different resolution than the source image (down sampled image has less pixels than the source image), wherein the available convolution kernels include at least one smoothing kernel (the coefficients at column 6 lines 21-22 has 1/10 at the boundary which brings more of the distant pixel into the new pixel) and at least one sharpening kernel (and the coefficient at column 6 line 38 has 1/15 at the boundary which brings less of the distant pixel into the new pixel and has 7/15 in the middle pixel which brings more of the middle pixel into the new pixel).

Claim 3:

Lin does teaches storing at least two convolution kernels in a memory, however at column 8 lines 10-32 and 40-45 Lin describes the functions of figure 3 are performed by a computer and associated software. Thus, the software at lines 40-45 would need to include the coefficients for the function of the image processor to be performed and the hard disk storing the software is a memory. Thus, in the software embodiment, the hard disk stores at least two convolution kernel coefficients. and in the generating step, either one of the stored convolution kernels is selected or another convolution kernel is generated by interpolating the stored convolution kernels.

Claim 6:

This claim claims wherein the local context metric has more than two possible values. Lin teaches this by filtering the white and black character and the background image separately, thus, Lin teaches three possible values for the context metric.

Claim 8:

This claim is a machine readable medium claim claiming the same functions of method claim 5, thus, this claim is rejected for the reasons given for claim 5 and in view of the discussion of software by Lin at column 8 lines 10-32 and 40-45.

Claim 10:

Lin teaches storing all available convolutions (two, one for the background and one for the text) in a memory (column 8 lines 10-32 and 40-45) wherein in the generating step, one of the stored convolution kernels is selected based on the calculated local context metric. Lin does teach storing at least two convolution kernels in a memory, at column 8 lines 10-32 and 40-45 Lin describes the functions of figure 3 are performed by a computer and associated software. Thus, in the software embodiment, the hard disk stores at least two convolution kernel coefficients and in the generating step, either one of the stored convolution kernels is selected.

Claim 12:

This claim claims wherein the local context metric has more than two possible values. Lin teaches this by filtering the white and black character and the background image separately, thus, Lin teaches three possible values for the context metric.

Claim 14:

Lin teaches an image scaling device (figures 2 and 3) that receives pixels of a source image (figure 2, S) and outputs pixels of a scaled destination image (figure 3, output of image merging unit 96), said image scaling device comprising: a context sensor (column 2 lines 56-58, column 4 lines 47-50, and column 5 lines 5-12 and 21-34,

text segmentation unit 58 and image separation unit 66) for calculating a local context metric based on local source image pixels (depending upon the tile's values one of three convolution kernels is selected to be applied to the tile); a kernel generator (source of coefficients) coupled to the context sensor, the kernel generator generating a current convolution kernel from a plurality of available convolution kernels (column 6 lines 21-22, 37 and 58) based on the local context metric calculated by the context sensor; and a scaler (78,86,72) coupled to the kernel generator, the scaler receiving the coefficients of the current convolution kernel from the kernel generator, and using the coefficients to generate at least one pixel of the scaled destination image from pixels of the source image (column 6 lines 22-24, 37-42, 58-63) , the scaled destination image having a different resolution than the source image (down sampled image has less pixels than the source image), wherein the available convolution kernels include at least one smoothing kernel (the coefficients at column 6 lines 21-22 has 1/10 at the boundary which brings more of the distant pixel into the new pixel) and at least one sharpening kernel (and the coefficient at column 6 line 38 has 1/15 at the boundary which brings less of the distant pixel into the new pixel and has 7/15 in the middle pixel which brings more of the middle pixel into the new pixel).

Claim 18:

This claim claims wherein the local context metric has more than two possible values. Lin teaches this by filtering the white and black character and the background image separately, thus, Lin teaches three possible values for the context metric.

Claim 16:

Lin teaches an image scaling device (figures 2 and 3) that receives pixels of a source image (figure 2, S) and outputs pixels of a scaled destination image (figure 3, output of image merging unit 96), said image scaling device comprising: a context sensor (column 2 lines 56-58, column 4 lines 47-50, and column 5 lines 5-12 and 21-34, text segmentation unit 58 and image separation unit 66) for calculating a local context metric based on local source image pixels (depending upon the tile's values one of three convolution kernels is selected to be applied to the tile); a kernel generator (source of coefficients) coupled to the context sensor, the kernel generator generating a current convolution kernel from a plurality of available convolution kernels (column 6 lines 21-22, 37 and 58) based on the local context metric calculated by the context sensor; and a scaler (78,86,72) coupled to the kernel generator, the scaler receiving the coefficients of the current convolution kernel from the kernel generator, and using the coefficients to generate at least one pixel of the scaled destination image from pixels of the source image (column 6 lines 22-24, 37-42, 58-63) , the scaled destination image having a different resolution than the source image (down sampled image has less pixels than the source image), wherein the kernel generator stores (column 8 lines 10-32 and 40-45) all available convolution kernels (two, one for the background and one for the text), and the kernel generator selects one of the stored convolution kernels as the current convolution kernel based on the calculated local context metric. Lin does teach storing at least two convolution kernels in a memory, at column 8 lines 10-32 and 40-45 Lin describes the functions of figure 3 are performed by a computer and

associated software. Thus, the software at lines 40-45 would need to include the coefficients for the function of the image processor to be performed and the hard disk storing the software is a memory. Thus, in the software embodiment, the hard disk stores at least two convolution kernel coefficients and in the generating step, either one of the stored convolution kernels is selected or another convolution kernel is generated by interpolating the stored convolution kernels.

Claim 20:

This claim is very similar to claim 14 with the differences being this claim claims in the preamble "A display device" rather than "An image scaling device" and claims at line 11 "a display for displaying the scaled destination image". Lin teaches these claimed features in the LCD panel 100 illustrated in figure 3.

Claim 22:

Lin teaches wherein the kernel generator stores (column 8 lines 10-32 and 40-45) all available convolution kernels (two, one for the background and one for the text), and the kernel generator selects one of the stored convolution kernels as the current convolution kernel based on the calculated local context metric. Lin does teach storing at least two convolution kernels in a memory, at column 8 lines 10-32 and 40-45 Lin describes the functions of figure 3 are performed by a computer and associated software. Thus, the software at lines 40-45 would need to include the coefficients for the function of the image processor to be performed and the hard disk storing the software is a memory. Thus, in the software embodiment, the hard disk stores at least

two convolution kernel coefficients and in the generating step, either one of the stored convolution kernels is selected.

Claim 24:

Lin teaches an LCD panel 100.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 9, 15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, U.S. Patent No. 6,044,178, in view of Miyake, U.S. Patent No. 6,088,489. Claim 15 claims The image scaling device as defined in claim 14, wherein the context sensor calculates a local context metric for each pixel in the destination image. Claims 9 and 21 claims the same limitations except for their dependency. Lin does not teach calculating a local context metric for each pixel in the destination image. Lin at column 5 lines 5-12 teaches calculating a local context metric for a tile and at column 5 lines 35-44 teaches calculating a local context metric for each line. Thus, Lin teaches that various sized area of the image may be analyzed to calculate a local context metric. Miyake at column 9 line 55 teaches calculating a local context metric for each pixel in the destination image. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to calculate a local context metric for each pixel since this will provide for better down sampling of the source image into the destination image.

12. Claims 7, 13, 19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, U.S. Patent No. 6,044,178, in view of Miyake, U.S. Patent No. 6,088,489. These dependent claims are very similar and only differ due to their dependency and type of claim, eg. method, device, etc. Lin teaches a complete sharpening kernel and the complete smoothing kernel as described in the rejection of claim 14. In addition the term complete is read to mean a complete kernel capable of sharpening or complete kernel capable of smoothing.

Lin fails to teach the following limitation of claims 7, 13, 19 and 25 "a plurality of other kernels that provide a transition between the complete sharpening kernel and the complete smoothing kernel".

Miyake teaches the available convolution kernels include at least one smoothing kernel (column 9 lines 51-55, to prevent the fine lines from being cut, a smoothing kernel is inherently used) and at least one sharpening kernel (column 9 lines 51-55, to prevent the corners from being smoothed , a sharpening kernel is inherently used).

Since Miyake teaches selecting from among a plurality of filters a filter necessary to filter the image then Miyake suggests a plurality of kernels between smoothing and sharpening.

Thus, it would have been obvious to one of ordinary skill in the art at the time of applicants invention to have a plurality of other kernels in Lin that provide a transition between the complete sharpening kernel and the complete smoothing kernel because this will allow Lin to filter images having inseparable text and background or inseparable white and black text or lines and corners.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A. Brier whose telephone number is (703) 305-4723. The examiner can normally be reached on M-F from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (703) 305-4713).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jeffery A Brier
Primary Examiner
Art Unit 2672